# ORIGINAL RESEARCH ARTICLE

## AWARENESS OF RISK FACTORS OF CARDIOVASCULAR DISEASE AMONG PATIENTS WITH DIABETES MELLITUS ATTENDING DIABETIC CLINIC OF BP KOIRALA INSTITUTE OF HEALTH SCIENCES

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## ABSTRACT

**Background**: Cardiovascular disease (CVD) is the leading cause of death worldwide. Awareness of risk factors of CVD is the first step towards effective preventive strategies to combat the CVD burden in diabetes patients. This study aimed to assess the awareness of risk factors of CVD among patients with diabetes mellitus attending diabetic clinic of B.P Koirala Institute of Health Sciences (BPKIHS).

**Methods:** A cross- sectional study was conducted among 112 patients with diabetes in diabetic clinic of BPKIHS. Convenient sampling was used for data collection over duration of six weeks using interview schedule by HDFQ II tool. The data were analyzed in the statistical package for social science software (SPSS) 16 versions and analyzed using descriptive and inferential statistics.

**Results:** Majority of respondent were aware about common risk factors such as (83.9%) smoking, (78.6%) physical activity, (75%) increasing age, (75.9%) high blood pressure, (71.4%) overweight respectively. Whereas most of the respondents were not aware about high cholesterol, fatty diet, preventive strategies and association of diabetes with CVD. Awareness was statistically significant with educational status, monthly income, residence, CVD information received and co-morbid condition as a heart disease.

**Conclusions:** Based on finding most of the respondents were aware about common risk factor even though they have inadequate level of awareness on overall risk factors of CVD among the risk factor they were poorly aware about cholesterol, gender and preventive aspect. So Effective education on diet and appropriate preventive strategies of CVD are indeed important to reduce CVD burden in diabetes patients.

## INTRODUCTION

Cardiovascular diseases (CVDs) are the leading cause of deaths in both developed and developing countries. There are two types of risk factors modifiable and non-modifiable risk factors. The more risk factors a person has, the greater the likelihood of developing heart CVDs.[1]

An estimated 17.9 million people died from CVDs in 2016, representing 31% of all global deaths. Of these deaths, 85% are due to heart attack and stroke. Over three quarters of CVDs deaths take place in low- and middle-income countries.[2] In 2012, diabetes was the direct cause of death of 1.5 million and by the year 2030 it is estimated that prevalence will be 439 million but in 2015, 415 million people had diabetes. Majority of the people with diabetes die with cardiovascular complication rather than diabetes complication.[3] cardiovascular disease can be highly preventable as it is caused by many modifiable risk factors. Therefore, awareness about adopting healthy behaviors like being physically active, consuming healthy diet, abstaining from smoking and keeping blood sugar and cholesterol under control is important.

Diabetes is an independent risk factor for CVDs, and people with diabetes are three to four times more likely to develop CVDs.[4] Despite the high burden of CVDs among diabetes research regarding awareness of risk factors of CVDs among these populations is neglected. Hence this study was aimed to assess the awareness on the risk factors of CVDs among patients with diabetes mellitus attending diabetic clinic of BPKIHS.

## METHODS

A cross-sectional study design was conducted. A total of 112 respondents who were diagnosed as a diabetes mellitus of at least six month duration attending diabetic clinic of B.P Koirala Institute of Health Sciences were selected for the study.[5] Respondents were selected using convenient sampling technique. Data was collected from April 9, 2017 to June 19, 2017 by using face to face interview. Structured Heart Disease Fact Questionnaire (HDFQ) II was used which consisted of 25 item with true/false/I don't know response for assessment of knowledge of respondents about the risk factors of cardiovascular disease. Respondents were asked to tell one of the options including 'True', 'false' or 'I don't know'. Respondent who had given correct answer got 1 mark for each item. Scores were calculated in percentage by

summing the total number of correct answers. The questionnaire had a Kuder-Richardson-20 internal consistency coefficient of 0.77.[6] Respondent whose HDFQ score ≥70 % was considered as adequate level of awareness of CVD risk factors and those who score <70% was considered as inadequate level of awareness of CVD risk factors.[7] Ethical clearance was obtained from Institutional Ethical Review Committee of B.P Koirala Institute of Health Sciences. Informed written consent was obtained from each participant. Privacy, confidentiality and anonymity of the respondents were maintained. The data were analyzed in the statistical package for social science software (SPSS) 16 versions and analyzed using descriptive and inferential statistics. The results were reported as frequency and percentages. Obtained findings were interpreted in tabular form.

**RESULTS**

The mean age of the respondents was 55.46±12.13 year's where 30.4% were from the age group 50-60 years and 55.4% were female. Only 2.7% were completed bachelor level. More than half (66.1%) of the respondents were from urban. Regarding occupation 30.4% of respondents were housewife followed by business, farmer, services holder and retired army (Table 1).

**Table 1: Socio-demographic characteristics of respondents n=112**

| Characteristics | Category | Frequency (%) |
|---|---|---|
| Age Group (in years) | <40 | 13 (11.6) |
| | 40-50 | 26 (23.2) |
| | 50-60 | 34 (30.4) |
| | 60-70 | 27 (24.1) |
| | > 70 | 12 (10.7) |
| Gender | Male | 50 (44.6) |
| | Female | 62 (55.4) |
| Educational Status | Illiterate | 28 (25.0) |
| | Literate | 41 (36.6) |
| | Primary Level | 16 (14.3) |
| | Secondary level | 19 (17.0) |
| | Higher Secondary | 5 (4.5) |
| | Bachelor and above | 3 (2.7) |
| Residence | Rural | 38 (33.9) |
| | Urban | 74 (66.1) |
| Occupation | Services | 15 (13.4) |
| | Business | 23 (20.5) |
| | Farmer | 20 (17.9) |
| | House wife | 34 (30.4) |
| | Retired Army | 15 (12.2) |
| | Others | 5 (4.4) |

Table 2, depicted that majority (87.5%) of respondents have mixed type of dietary habit. Only 8.0% were recent smoker whereas 11.6% have habit of recent alcohol consumption. Only 20.5% have habit of doing exercise regularly. More than half (50.9%) of the respondents were overweight and mean BMI of respondent was 25.02 ±2.6 kg/m². Where (70.5%) of the

respondents used oral agents as a management of diabetes.

**Table 2: Health related behavior of the respondents (n=112)**

| Characteristics | Category | Frequency (%) |
|---|---|---|
| Dietary Habit | Vegetarian | 14 (12.5) |
| | Mixed Diet | 98 (87.5) |
| Smoking Habit | Recent Smoker | 9 (8.0) |
| | Past Smoker | 13 (11.6) |
| | Never smoke | 90 (80.4) |
| Alcohol Consumption Habit | Recent consumer | 13 (11.6) |
| | Past Consumer | 11 (9.8) |
| | Never Drink | 88 (78.5) |
| Body Mass Index kg/m² (WHO Classification) | Normal | 53 (47.3) |
| | Overweight | 57 (50.9) |
| | Obese | 2 (1.8) |
| | Mean BMI ( kg/m²): 25.02, SD:2.6, Range 18.9-31.2 | |
| Diabetes Management | Diet and Exercise | 15 (13.4) |
| | Oral agents | 79 (70.5) |
| | Insulin | 10 (8.9) |
| | Oral agents and Insulin | 8 (7.1) |

**Table 3: Most correct and least correct response from Heart Disease Fact Questionnaire II**

| Heart Disease Fact Questionnaire II | Frequency (%) |
|---|---|
| **Most correct Response** | |
| 1. Smoking is a risk factor for heart disease. | 94 (83.9) |
| 2. High blood pressure is a risk factor for heart disease | 85 (75.9) |
| 3. Keeping blood pressure under control will reduce a person's risk for developing heart disease | 85 (75.9) |
| 4. Regular physical activity will lower a person's chance of getting heart disease | 88 (78.6) |
| 5. Walking and gardening are considered exercise. | 94 (83.9) |
| 6. Weight under control has low risk for CVD | 86 (76.8) |
| **Least Correct Response** | |
| 7. High cholesterol is a risk factor for developing heart Disease. | 55 (49.1) |
| 8. Eating fatty foods does not affect blood cholesterol levels. | 34 (30.4) |
| 9. "good" cholesterol (HDL) is high you are at risk for heart disease. | 9 (8.0) |
| 10. "bad" cholesterol (LDL) is high you are at risk factor for heart disease. | 16 (14.3) |
| 11. Men with diabetes have a higher risk of heart disease than women with diabetes: | 23 (20.5) |
| 12. People with diabetes rarely have high cholesterol: | 47 (42.0) |
| 13. If a person has diabetes, keeping their cholesterol under control will help lower heart disease | 31 (27.7) |

Table 3, depicted that majority (83.9%) of respondent considered smoking as a major risk factor for CVD whereas only 14.3% of respondent knew bad cholesterol as a risk factor.

**Table 4: Overall level of awareness regarding risk factors of CVD                                                                           n= 112**

| Characters | Responses | |
|---|---|---|
| | Adequate (≥70%) | Inadequate (<70%) |
| Awareness of risk factors of CVD | Frequency (%) | Frequency (%) |
| | 37 (33) | 75 (67) |
| | Mean: 14.31, SD: 5.08 Range: 1-23 | |

Table 4, depicted that Heart disease fact questionnaire result, the mean HDFQ score was 14.31±5.08. Only 33% of the respondent had adequate level of awareness on risk factors of CVD where as 67% of respondent had inadequate level of awareness on risk factors of cardiovascular disease.

**Table 5: Association between the awareness of CVD with socio-demographic variable**

| Characteristics | Awareness on risk factors of CVD | | X² | p-value |
|---|---|---|---|---|
| | Adequate | Inadequate | | |
| Age * | | | | |
| < 50 years | 13 (33.3%) | 26 (66.7%) | 0. 002 | 0.961 |
| ≥ 50 years | 24 (32.9%) | 49 (67.1%) | | |
| Educational Status * | | | | |
| Illiterate | 5 (17.9%) | 23 (82.1%) | 3.849 | 0.043 |
| Literate | 29 (36.8%) | 52 (63.2%) | | |
| Residence * | | | | |
| Rural | 8 (21.1%) | 30 (78.9%) | 3.843 | 0.05 |
| Urban | 29 (39.2%) | 45 (60.8%) | | |
| Occupation * | | | | |
| Employed | 22 (37.9%) | 36 (62.1%) | 1.303 | 0.254 |
| Unemployed | 15 (27.8%) | 39 (72.2%) | | |
| Monthly Family Income (Rupees) * | | | | |
| <20,000 | 51 (75.0%) | 17 (25.0%) | 5.052 | **0.025** |
| ≥ 20,000 | 24 (54.5%) | 20 (45.5%) | | |

Pearson Chi-Square (*), Continuity Correction (**)

## DISCUSSION

The major outcome of this study revealed that only 33% had an adequate awareness on risk factors of CVD whereas mean score of HDFQ 14.31±5.08. Majority of the respondents were mostly aware of five common risk factors such as smoking, high blood pressure, physical activity, age and overweight and poorly aware about cholesterol and gender. Among different domain smoking was ranked as the major common risk factor by majority (83.9%) of respondents. Present study finding is consistent with study conducted where 92% of respondents identify smoking as major risk factors[8] it was further supported by Acharay and Khadka[9], Fernandez et al.[10] and study conducted in Saudi Arabia[11]. The current result about smoking may be as it has been frequently announced 'smoking is injurious to health' through different mass media.

Table 5, depicted that statistical significant association of awareness with educational status, monthly income, residence, comorbid condition and those who received CVD information at 0.05 level of significant.

Table 6, depicted that statistical significant association of awareness comorbid condition as heart disease and those who received CVD information at 0.05 level of significant.

**Table 6: Association between the awareness of CVD with health related behavior**

| Characteristics | Awareness on risk factors of CVD | | X² | P value |
|---|---|---|---|---|
| Smoking  Habit * | | | | |
| Smoker | 8 (36.4%) | 14 (63.6%) | 0.137 | 0.711 |
| Non –smoker | 29 (32.2%) | 61 (67.8%) | | |
| Body Mass Index * | | | | |
| Normal | 14 (26.4%) | 39(73.6%) | 1.993 | 0.158 |
| Overweight | 23 (39.0%) | 36 (61.0%) | | |
| Duration of Diabetes * | | | | |
| <2years | 10 (27.0%) | 27 (73.0%) | 0.902 | 0.342 |
| ≥ 2years | 27(36.0%) | 48 (64.0%) | | |
| Diabetes Management * | | | | |
| Medication | 27(34.2%) | 52 (65.8%) | 0.158 | 0.691 |
| Others | 10 (30.1%) | 23 (69.7%) | | |
| CVD  Information Received * | | | | |
| Yes | 25 (45.5%) | 30(54.5%) | 7.534 | 0.006 |
| No | 12 (21.1%) | 45 (78.9%) | | |
| Family History** | | | | |
| Yes | 1 (11.1%) | 8 (88.9%) | 1.185 | 0.276 |
| No | 36 (35.0%) | 67 (65.0%) | | |
| Heart Disease * | | | | |
| Yes | 3 (13.0%) | 20 (87.0%) | 5.229 | 0.022 |
| No | 34 (38.2%) | 55 (61.8%) | | |

Pearson Chi-Square (*), Continuity Correction (**)

Regarding high blood pressure majority of the respondents (75%) identified relationship between hypertension and CVD. This finding is consistent with study conducted by Fernandez et al.[10] where 84% of the respondents identify high blood pressure as risk factors of CVD.  This might be respondents got information of high blood pressure as risk factors of CVD during their clinical visit as most of the respondents had high blood pressure. Whereas majority of the respondents (75%) considered increasing age as a risk of CVD, whereas as in another study conducted among middle aged administrative staffs of Kathmandu only (47.7%) aware about the increasing age as a risk factor of CVDs.[12] Regarding obesity majority (71.4%) of respondents considered obesity as risk factors of CVD similar, finding was observed on the study conducted Saeed et al.[13] in which 72% noted obesity as risk factors of CVD. This may be due to similarity in sample size.

The very worrisome finding was on awareness of high cholesterol (49.1%), its fractions (8%) and preventive aspects (30.4%) of cholesterol and its relation with CVD were abysmally low. This was despite the fact that the first risk factor to be associated with CVD was cholesterol in the study conducted by Tungdim et al.[14] and Akintude and opadijo[15]. Current study finding indicates an urgent need for these factors to be addressed in health education and public awareness campaigns. Majority of respondents (72.3%) were not aware about cholesterol control in diabetes followed by (78.6%) diabetes and HDL relation and (79.5%) male female risk ratio of developing cardiovascular disease in diabetes patients. This finding is supported by George and Andhuvan[8] in which majority of the respondents (80%) failed to identify HDL with diabetes relation. As increasing cholesterol among diabetes is a major risk factor for CVD but this current result indicates still more awareness and education about cholesterol and its control among diabetes patient need to be consider during their regular visit.

The study reveals statistically significant association of the awareness with (p=0.043) education. Literate respondents exhibited adequate awareness than illiterate respondents. Similar finding was observed on the study conducted by Tovar and Clark.[16] This finding highlights the need for multilateral interventions in order to enhance CVD awareness. In line with the study conducted by Gladys, Mathilda and Doreen[17] this current study shows statistically significant association with awareness on risk factors of cardiovascular disease with (p=0.05) residence. The reason may be due to people from urban area have easy access to utilize the health services and mass media and become more aware about CVD. Similarly, there was statistically significant (p=0.006) association of awareness with respondents who received CVD information from different sources. Similar finding was noted on study conducted at Malaysia.[18] Likewise there was statistical significant association of awareness with (p=0.025) monthly income this finding is supported by Yadav and Wagle.[19]

The study area was limited to only one organization and covered only the Small sample size so it might be difficult to generalize the findings of the study.

## CONCLUSION

Majority of respondents were aware about smoking, obesity, high blood pressure and increasing age whereas a decrease awareness about the cholesterol, gender, dietary factor and preventive strategies of CVD. There was statistical significant association of the awareness of risk factors of CVD with education, monthly income of family, residence, respondents who received CVD information and co morbid condition as heart disease.

Thus study concluded that limitation of awareness in cholesterol, gender, diet factors and preventive strategies draw attention that efforts to increase their awareness have to be address on these area. So, appropriate health education to increase awareness about CVD risk factors remains the fulcrum of preventing increased cardiovascular risk among diabetes patients.

**CONFLICT OF INTEREST:** None

**FINANCIAL DISCLOSURE:** None

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